

Historic, Archive Document

Do not assume content reflects current
scientific knowledge, policies, or practices.



"Welcome Shelter Near Trail's End"

FEDERAL-STATE COOPERATIVE
SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for

RIO GRANDE DRAINAGE BASIN

MAY 1, 1947

By

Division of Irrigation, Soil Conservation Service
United States Department of Agriculture
and
Colorado Agricultural Experiment Station

Data included in this report were obtained by the agencies named above in cooperation with the U. S. Forest Service, National Park Service, State Engineers of Colorado and New Mexico and other Federal, State and local organizations.

May 1, 1947
WATER SUPPLY OUTLOOK
RIO GRANDE AND CANADIAN DRAINAGE BASINS

Near the end of the snow season the outlook for water supply in irrigated areas served by the Rio Grande and its tributaries is generally poor. Since February 1 the accumulation of snow in the mountain areas has been much below average. However, the snow pack is greater than last season. Reservoir storage is low. No snow surveys were made in northern New Mexico but traces of snow are reported on some courses and precipitation is reported as from 50 to 75 percent of normal at higher elevations. Ground water levels are low in the pumping areas.

RIO GRANDE

Snow cover on the mountains surrounding the San Luis Valley decreased moderately during the month of April except at Summitville where an additional 2 inches of water was measured. There has been little additional snow since March 1. The water content measured on snow courses May 1 is 70 percent of normal and slightly over twice that recorded a year ago. The extreme deficiency is on the Conejos River where the summer discharge is expected to be 65 percent of the past ten year average. On the east side of the Valley the snow cover is near normal. Precipitation in the Valley area has been above normal during the past month with two wet snows reported. Stream flow is low due to cold weather. Reservoir storage is below last year and 40 percent of the 1936-45 average.

Similar conditions exist over the headwaters of the Rio Chama and other Rio Grande tributaries in northern New Mexico. At Cumbres Pass the snow water content is less than 50 percent of normal. Valley precipitation in the Middle Rio Grande area has been deficient and crop conditions remain unfavorable. Storage in El Vado Reservoir is now 84,000 acre-feet, 151,000 acre-feet under May 1, 1946.

The combined storage in Elephant Butte and Caballo reservoirs is down to 657,000 acre-feet as compared to 1,164,000 last year at this time. Recent precipitation has been below normal but range and crop conditions are reported as good in the irrigated areas of southern New Mexico. The flow of the Rio Grande at San Marcial has been far below normal.

Precipitation on the headwaters of the Pecos River, Tesuque and Santa Fe Creeks continues to be light. On the project area near Carlsbad, April precipitation has been sub-normal. However, storage in Alamogordo, McMillan and Avalon reservoirs totals 27,800 acre-feet as compared to 8,400 a year ago. Current stream flow is reported as average.

CANADIAN RIVER

On the Canadian River tributaries there is a trace of snow at higher elevations. Runoff from snow will be about 75 percent of normal and 150 percent of last year. Storage in Conchas reservoir is 359,000 acre-feet or 96 percent of capacity. On May 1 there was no stream flow. Range conditions are only fair due to a deficiency in precipitation but crop conditions on the irrigated lands are good.

RIO GRANDE DRAINAGE BASIN

STREAM FLOW FORECASTS, May 1, 1947

Basin and Stream	April-September, inclusive, Streamflow Thousands Acre Feet				
	Forecast 1947	Measured Runoff			10-year avg. 1936-1945
		1946	1945	1944	
<u>RIO GRANDE</u>					
South Fork at South Fork	100,000		123,000	165,000	139,000
Rio Grande at Del Norte	400,000	347,000	467,000	767,000	555,000
Alamosa above Terrace Res.	70,000	50,000	77,000	101,000	81,000
Conejos at Mogote	150,000	124,600	221,000	276,000	233,000
Culebra at San Luis	35,000	16,000	39,000	45,000	39,000
Chama at Park View	170,000			267,000	262,000
Taos at Los Cordovas	50,000			42,000	48,000
Embudo Creek at Dixon	37,000			68,000	72,000
Rio Grande at Otowi Bridge	650,000		874,000	1,046,000	1,017,000
Pecos at Pecos	35,000		69,000	66,000	73,000

SNOW SURVEYS AND IRRIGATION WATER FORECASTS
RIO GRANDE BASIN

STATUS OF RESERVOIR STORAGE, MAY 1, 1947

STREAM	RESERVOIR	USABLE CAPACITY 1000 A.F.	THOUSANDS OF ACRE FEET IN STORAGE					May 1, 1947		Forecast
			About May 1			10-yr. Avg. 1936-45	% Cap.	% Avg.	% Capacity	
			1947	1946	1945					
RIO GRANDE	Rio Grande	51.1	6.9	1.9	22.3	13.1	19.9	13	35	20
	Santa Maria	43.6	5.5	6.7	16.7	6.3	11.6	13	47	25
	Sanchez	103.2	7.4	9.1	12.1	16.6	19.5	7	38	15
	Terrace	17.7	2.4	2.4	3.8	5.1	5.3	14	45	55
	Continental	26.7	1.2	15.1	19.5	8.2	6.7	5	18	40
	Elephant Butte	2219.0	450.0	964.7	1212.9	1140.4	1165.7	20	39	40
CHAMA RIVER	Caballo	346.0	207.3	199.5	217.4	195.7	132.3	60	157	60
	El Vado	226.0	84.1	151.1	140.0	72.3	121.8	37	69	60
CANADIAN RIVER	Conchas	374.9	358.7	333.5	341.2	397.0	292.5	95	122	95
	Alamogordo	132.2	23.2	4.4	7.0	25.5	56.2	17	41	30
PECOS RIVER	McMillan-Avalon	43.5	4.6	4.0	11.0	12.1	18.7	11	25	35

SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for
RIO GRANDE BASIN
May 1, 1947

SUMMARY OF MAY 1 SNOW SURVEYS AND COMPARISON OF DATA WITH THAT OF PREVIOUS YEARS BY WATERSHEDS

WATERSHEDS	Snow Depth		Water Content		Number Courses in Average	Snow Density		1947 Water Content in percent of		
	Eleven Year Avg.*	1946	1947	Eleven Year Avg.*		1946	1947	Eleven Year Avg.*	1946	
Rio Grande	In.	In.	In.	In.	10	Percent	Percent	Percent	70	230
Upper Rio Grande	22.8	7.6	17.0	8.9	3	39	36	36	59	166
Alamosa River	23.0	8.6	14.9	9.8	2	42	41	39	88	145
Conejos River	34.2	22.6	30.3	11.8	2	35	32	34	47	535
Culebra River	23.0	2.6	12.9	10.2	1	44	35	37	92	--
	28.6	0.0	26.4	10.1		35	--	35		--

*Some for shorter periods

P R E C I P I T A T I O N D A T A

WATERSHED	STATE	Precipitation		Departure from Normal	Precipitation *		Departure
		October 1 to April 30	Inches		April	Inches	
Canadian	New Mexico	5.28	-0.05	Inches	0.93	-0.39	Normal
Rio Grande	Colorado	3.79	-0.58	-0.05	1.10	+0.20	Inches
Rio Grande (N)	New Mexico	6.07	-1.63	-1.63	0.46	-0.76	
Rio Grande (S)	New Mexico	2.84	-1.48	-1.48	0.12	-0.44	
Pecos	New Mexico	5.10	-0.21	-0.21	0.51	-0.38	

Precipitation during April was below normal except in the San Luis Valley. The accumulated precipitation since October 1 was below normal throughout the area.

*April precipitation tentative

RIO GRANDE DRAINAGE SNOW SURVEYS

May 1, 1947

DRAINAGE BASIN and SNOW COURSE	LOCATION			SNOW COVER MEASUREMENTS										Past Record Av. Water Content (Inches)
	No. and State	Sec.	Twp. or Lat.	Range or Long.	Elev. Survey	Date of Survey	Snow Depth (Inches)	Water Content (Inches)			Years or Record			
								1947	1946	1945				
Wolf Creek Pass Upper Rio Grande Silver Lakes River Springs LaVeta Pass #2 Summitville Cumbres Pass #2 Santa Maria Culebra Fort Garland	26 Colo.	4	37N	2E	10000	4/29	44.8	17.5	10.6	37.0	12	26.0		
	27 "	13	40N	4W	9350	4/30	0.0	0.0	0.0	0.0	12	2.0		
	47 "	15	36N	5E	9600	5/5	0.0	0.0	0.0	0.0	11	1.1		
	49 "	25	33N	6E	9300	4/30	0.0	0.0	0.0	3.2	11	1.2		
	74 "	22	28S	70W	9300	4/30	12.1	5.0	0.0	8.7	12	4.3		
	76 "	30	37N	4E	11500	5/1	60.6	20.7	14.5	23.5	9	22.5		
	77 "	17	32N	5E	10000	4/30	25.8	9.6	1.8	31.3	12	19.2		
	80 "	8	41N	2W	9700	4/30	0.0	0.0	0.0	0.0	9	1.5		
	82 "		37.2N	105.2W	10000	5/1	26.4	9.3	0.0	13.1	8	10.1		
	84 "	13	29N	72W	8200	5/5	0.0	0.0	0.0	0.0	6	1.1		
Average for drainage							17.0	6.2	2.7	11.7	8.9			
UPPER RIO GRANDE Wolf Creek Pass Upper Rio Grande Santa Maria	RIO GRANDE TRIBUTARIES IN SAN LUIS VALLEY													
	26 Colo	4	37N	2E	10000	4/29	44.8	17.5	10.6	37.0	12	26.0		
	27 "	13	40N	4W	9350	4/30	0.0	0.0	0.0	0.0	12	2.0		
	80 "	8	41N	2W	9700	4/30	0.0	0.0	0.0	0.0	9	1.5		
	Average for drainage							14.9	5.8	3.5	12.3	9.8		
	47 Colo.	15	36N	5E	9600	5/1	0.0	0.0	0.0	0.0	11	1.1		
	76 "	30	37N	4E	11500	5/1	60.6	20.7	14.5	23.5	9	22.5		
	Average for drainage							30.3	10.4	7.2	11.8	11.8		
	49 Colo.	25	33N	6E	9300	4/30	0.0	0.0	0.0	3.2	11	1.2		
	77 "	17	32N	5E	10000	4/30	25.8	9.6	1.8	31.3	12	19.2		
Average for drainage							12.9	4.8	0.9	17.2	10.2			
CULEBRA RIVER Culebra	82 Colo.		37.2N	105.2W	10000	5/1	26.4	9.3	0.0	13.1	8	10.1		

*On adjacent drainage

The following organizations cooperate in the snow surveys and irrigation water supply forecasts for the Colorado, Missouri-Arkansas and Rio Grande watersheds by furnishing funds or services.

STATE

Colorado State Engineer
Wyoming State Engineer
Utah State Engineer
New Mexico State Engineer
Montana State Engineer
Nebraska State Engineer
Colorado Experiment Station
Colorado Extension Service
Montana Experiment Station
Utah Experiment Station

FEDERAL

Department of Agriculture
 Forest Service
 Soil Conservation Service
Department of Interior
 Bureau of Reclamation
 Indian Service
 Geological Survey
 National Park Service
Department of Commerce
 Weather Bureau
War Department
 Army Engineer Corps

PUBLIC UTILITIES

Colorado Public Service Company
Western Colorado Power Company
Montana Power Company
Denver and Rio Grande Western R. R. Company

MUNICIPALITIES

City of Bozeman
City of Denver
City of Boulder

WATER USERS ORGANIZATIONS

Poudre Valley Water Users' Association
Arkansas Valley Ditch Association
Colorado River Water Conservation District

IRRIGATION PROJECTS

Farmers Reservoir and Irrigation Company
San Luis Valley Irrigation District
Santa Maria Reservoir Company
Costilla Land Company
Uncompahgre Valley Water Users' Association
Wyoming Development Company
Goshen Irrigation District
Kendrick Project
Pathfinder Irrigation District
Salt River Valley Water Users' Association
San Carlos Irrigation and Drainage District
Twin Lakes Reservoir and Canal Company

Many other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.

